SEQUENCE LISTING

<110> Chaudhary, Sarita
     van Rooijen, Gijs
     Moloney, Maurice
     Singh, Surinder

<120> Flax Seed Specific Promoters

<130> 9369-151

<140>
<141>

<150> 60/151044
<151> 1999-08-27

<150> 60/161,722
<151> 1999-10-27

<160> 25

<170> PatentIn Ver. 2.0

<210> 1
<211> 4305
<212> DNA
<213> Linum usitatissimum

<400> 1
ttcaaaaccc gattcccgag gcggccctat tgaagatatg ggggaagttc gacgagatcg 60
atgtcgggtc gagtgctatg gtgatggtgc cgtttggggg gaggatgagc gagatagcca 120
agactagcat tccgttccca cacagagttg ggaatttgta ccaaatccaa cacttgtcgt 180
attggagcga cgatagggac gcggaaaaac acatccgttg gatcagggag ttgtacgatg 240
atctcgagcc ttatgtgtcg aagaatccga ggtatgctta cgtgaactac agggatctcg 300
acatcgggat gaatggagga ggtgaagggg atgagaaggg tacttatggt gaggctaagg 360
tgtgggggga gaagtacttt ggggtcaact ttgatcggtt ggttcgggtg aagacgattg 420
ttgatcccaa taatgtgttt cgaaacgagc agagcattcc ctgaattcca actcggttat 480
aaggatcaat gatcaatgag aattttcctt tccaatgtga ttagaagttc tattgggtca 540
gctttctcaa ctgctcctat tcatttagat taattcataa caactattaa tttaccagcc 600
ttttatccgg cccgttggcc gatttatttt cttaagtttt agatgaaatg aaaccgattt 660
agtttttatt gagatgagat taatcttaat ttgcttgaaa tttactcacg gttgatgtga 720
tatttggaat taactaaaat gataaatatc ggataaaaat aaaaatattt aaaataaata 780
acataaacat aagaacaata aaataaataa atttaatttt aatttatttc cttgttttct 840
ttctgtatca tacatctctt ctcttacttc ttaaaggctt ttcaattatc acttaattaa 900
atacaataga taaatcgtta attctataac attaacctat acacttgcat ggtgaacaat 960
caatatgata atataataat aatataataa ttcaattatt aatctacaat tttttaatta 1020
taaagtttat gcggtcagtt tctgcaagct ccgagctcct tgtcatcgtt agtttctgcg 1080
gtctcaaggt ataacgactc ggagcgacga gccctttgct tccaatggac gggttgcatt 1140
tctgccgtcg ttgagctcga ttggcgtgtc atgctggagt cagagttcct acaaaaaaac 1200
cctaaactag agggtgatta gggtgaaatt agggtgttgg cctgggttcc attgtccaaa 1260
gttttagtca acttaaaaac agacttaaat tttatgcttc aaaatagttt atctgttatt 1320
atattagcgt gtaattagtc ttgacaatgg ggccggacgg gtacggattc gggaccccga 1380
tccccgccca tagtgtaatg gctcaactgc caagtcagca ttggaccgaa attattggac 1440
acgaagtact aatgtgaaaa actttacatt tgttattttc tactttaata ctatgctatt 1500
ttcaaaattt gaactttaat actatgtttt tatatagttt agtatatctt aattttatg 1560
caaattcatc taattgtatt aaactatttt cgatccgtag ctaattattt cgaaggcaag 1620
tcaaagtgtt attgtggact atgtgagcta atattgaacc tttatctctc ccaaccactc 1680
aagttaattg aaccaaactc gatcggttgg gtttcgagct atttcgagcc attgttgtta 1740
tatgcacgtg agatatcaag attgacccga cactttatt atgataatgt agaaaaagaa 1800
aacatattct aagactacat gcatgcaaag tgcaacccct gcatggaaag ctgctcaaca 1860
cgtggcatag actcccgcca cgtgtccatt ccacctcatc acctcacccc caccgttcac 1920
ctcttattat atcacaacaa tcaatcaatc ctactcctcc atactcgaac aaatccgacc 1980
aacttatacc aatattccca aacttgatta atttctcagc aatatggatc agacgcacca 2040
gacatacgcc ggaaccacgc agaacccgag ctatggcggc gggggcacaa tgtaccagca 2100

```
gcagcagccg aggtcttacc aggcggtgaa ggcggccact gcagccaccg cgggtggatc 2160
cctcatcgtt ctgtccggtc tcatccttac ggccaccgtc atttcactca tcatagccac 2220
ccctctcctt gtcatcttca gccctgttct tgtcccggct ctcatcaccg tcgggctctt 2280
gatcaccggg tttcttgctt ccggtgtggtt cggagtcgcc gccgtcaccg tcttgtcctg 2340
gatctatagg tatgtataag ctttggactt tagtattgtt ataaaataca taagctgatt 2400
tatgaacatg gatctcccaa caagagttat ttaaatgcat tctcggtctg actcgatcgg 2460
ttgggttttg agctactcgg tcacaatggt cgggtcggct ctggatctgt tatactaata 2520
tttggaagcc tgaagtttca ttgttctgcc ccaacttccc actacctttt gagggtgtta 2580
agaagccata caaactaatt atgaatccct cccaacaact cagaactcga gtcagtgggt 2640
tgtgacggtt ctctataaac atttcgaaaa tctttgttca atgaacgtag aaatgaccat 2700
gcttgatgat tgtgggtctt ataaggtacg tgaccggcgg gcaccggcg ggaggggatt 2760
cgctggacca ggctaggtcg aagctggccg gaaaggccag ggaggtgaag gacagggcgt 2820
cggagttcgc acagcagcat gtcacaggtg gtcaacagac ctcttaaaga gagtcctcta 2880
gttaaattgg tcttcgtttc tgtttcgtgg cggcttgtaa actctctttt aagtgtgctg 2940
ttttcctttt gtctcgtgtg ttgtaagtga aagtgtaatc gaagttccaa gttggagatg 3000
tttgtaacga tgatgttttc taataatcag agatattaaa agggttgcta atttagtatt 3060
gcgtctgatc tcggaccaaa ctcgcaagta aaattgcaga ggatgagttg tacagaacaa 3120
gcgtgcattg ttctggaagt tcatctcctt ggagccgacc ttgttgcttg cagtttcgcc 3180
aagtccacta gacaatgtta cgagttaagc ctctgtcaaa cagatcgctc tagcgtccca 3240
gaaaacacca gatttttcga aaaccatcgg ggatcaattt tcgattcaat tccgatcttg 3300
gaagtacttg aacagaagca tgatgctaaa agataataga aaatcgaagc ctagaaaagt 3360
tgtacagaaa gcaacaagtc aaaaatatag atcaacttca aaggttcaaa ttacatctta 3420
cagaccccaa aaaatgacag ttaacagaag tcgactaaac agaaaccagc cagcttcacc 3480
tggaatgaag gagctttgat caatccatcc tagcttcatt cccctttgaa attgcagaca 3540
gagctctcat cctgctaaag ctggtggctt attcttaacc ctgcaatcaa taagcatgaa 3600
ctaacattgg acaccttcat cggcggattg ctcgaaaatc agtgagcgag ggatttacct 3660
gtgtgtgtag taacctctct ccttgtacat aaaatctgga aattccggca tcaactactg 3720
ccacctttct gcttaaggtg atttatcac caaggctgag cgtgattcct tgcgtcttgc 3780
tccgaatcct gatgtatcca ctgagctttc catctccttc cttctccagg cttatgttca 3840
ccaatgcgtc ctcgccgaac acactcttgg cgtacaagtt cgcagccagg aatccacact 3900
ctccatcaag tgcagacctg caaacccaa ataagaacac aaactccaaa gtcaacgatc 3960
aattctccgc cttttatgaa gaaaaggaaa cttctgggta cttacggtgc cgtcagacac 4020
ttcatatttg tagacttgat gatatggtcc aggaattcct tctcgttctg aattgttgtg 4080
ttaacagcaa cctgacagac agaaagatat cgcaaattta agatactggg atgactaggc 4140
acagagaaat gaaatctaat tctagaagta aaaccttatt ttcccattca aattctgccc 4200
acatagtccg gaacgcagca tccgagcaag aagcaggaga gatgtaatcc atgatatcga 4260
tgtggatatc gttgaggacg acaactgaac gttccatcac attgg            4305
```

<210> 2
<211> 109
<212> PRT
<213> Linum usitatissimum

<400> 2

Met	Asp	Gln	Thr	His	Gln	Thr	Tyr	Ala	Gly	Thr	Thr	Gln	Asn	Pro	Ser
1				5					10					15	

Tyr	Gly	Gly	Gly	Gly	Thr	Met	Tyr	Gln	Gln	Gln	Pro	Arg	Ser	Tyr
			20					25				30		

Gln	Ala	Val	Lys	Ala	Ala	Thr	Ala	Ala	Thr	Ala	Gly	Gly	Ser	Leu	Ile
		35					40					45			

Val	Leu	Ser	Gly	Leu	Ile	Leu	Thr	Ala	Thr	Val	Ile	Ser	Leu	Ile	Ile
	50					55					60				

Ala	Thr	Pro	Leu	Leu	Val	Ile	Phe	Ser	Pro	Val	Leu	Val	Pro	Ala	Leu
65					70				75						80

Ile	Thr	Val	Gly	Leu	Leu	Ile	Thr	Gly	Phe	Leu	Ala	Ser	Gly	Gly	Phe
				85					90					95	

Gly	Val	Ala	Ala	Val	Thr	Val	Leu	Ser	Trp	Ile	Tyr	Arg
			100					105				

<210> 3
<211> 46
<212> PRT
<213> Linum usitatissimum

<400> 3
```
Tyr Val Thr Gly Gly His Pro Ala Gly Gly Asp Ser Leu Asp Gln Ala
 1               5                  10                  15

Arg Ser Lys Leu Ala Gly Lys Ala Arg Glu Val Lys Asp Arg Ala Ser
            20                  25                  30

Glu Phe Ala Gln Gln His Val Thr Gly Gly Gln Gln Thr Ser
        35                  40                  45
```

<210> 4
<211> 3501
<212> DNA
<213> Linum usitatissimum

<400> 4
```
tctagacatt tgacataaac cgaattcaaa gaacacaaca ttgactaaca ccaaaaagaa 60
atagagtagt gaaatttgga agattaaaaa atagaaacaa actgattctt agaaagaaga 120
gatgattagg tgctttcagt tcggtctgtc aggaaatcga gatgttcact tatttacatt 180
gtcgattcat ctcccaattg tcctggttcc tttactgtcc gacgcttttt tgaatcccag 240
ttaattccca tcaagtcttc cttcagctgc gtagcactgc tagctccaac atggagcgtg 300
gagtctactc gttcatgggg catcgcaaag gtttgccttc atgttctgct accagccagc 360
gcccaccgcc tcttggttgt gtggacaatt gcggtgaagc gcgcaagttg acatcccata 420
gtctcgacac ttcaccatat ggatgtttaa aacgtatatc acgagtgcga tctacatgtc 480
ccatcacacc acatataaag caatagtttg ggagcttttc atatttgaaa cgggcattga 540
cgacttgccc tctcgataat ttaatctttt tttctcttca gctgattgtg tgcatccatt 600
cgggctcaga agcacatcaa agggatctct ccatcgtagt attgggtcgt gtcgtatgat 660
acgaagcagt cgatgaagtt tcctaatgtg cgagctacag gctccgcaaa gaacccgcga 720
ggtagatcgt atgctagtac ccaaaaatca gtttgtcgta gcggaatcaa cactagagac 780
tcaccctaat gcatctcatg tgtgatgaac agtttatcat ttgtgagtct aggggtcatt 840
gtcgatgacc caatgcacat tgagcttatg atagaatttg aataggaagc gttttccacc 900
cagatcacga atagctaccc cttttttcggg cgccaaattt ccggcatcct atcttccacc 960
acaacttaaa gatgcgatcg gtaaggaact caccgaccac acacatcgaa taatcttcgg 1020
tgaccggttc ctgttgatca agtccctcaa tttcctcaac ctagtcttca atcgccgcta 1080
gcgttatccc ccgcatatgg actttcatag cgcggagcgt agccggagac gacgagcaag 1140
aaggatgagc ggcggcagat tgcggctaaa gaaacgagct tcctgccttg ctctatggag 1200
gcagatttct gagttgatgg tgatggattt gtgatgtgga cacttttaat ttaagttgat 1260
tttttagcac ttcattcacg taattaaata aataatttcc agtattttat atttatttcc 1320
ttacgttatc taatttttttg aaagattaaa actttgatat aggcaagatc atgacacgtc 1380
gaagttaagt gaatgagact cctaacaagg taataacaaa gcagttcata aaccgaatga 1440
ccttgatctt tactaagctt gagatcattg aacatataat taaatacgtt aatgaaagat 1500
aagaacttta atataaaaat cattcaaaac gagaaactga taacaaaaac aaagcaaacg 1560
gccaacaaaa taatagacgg tggaaggatg atgcagagcc atccaccctt ttttcccagt 1620
ttccttactg cttacttctc tatgcatatc acaagacgcc cttgaaactt gttagtcatg 1680
cagagcccTt actcgccagg tcaccgcacc acgtgttact ctatcacttc tcctcccttt 1740
cctttaaaga accaccacgc cacctccctc tcacaaacac tcataaaaaa accacctctt 1800
gcatttctcc caagttcaaa ttagttcaca gctaagcaag aactcaacaa caatggcgga 1860
tcgtacaaca cagccacacc aagtccaggt ccacacccag caccactatc ccaccggcgg 1920
ggctttcggc cgttatgaag gtggactcaa aggcggtcca catcaccagc aaggatcagg 1980
cagcggccca tcagcttcca aggtgttagc agtcatgacc gcgctcccca tcggcgggac 2040
cctccttgcc ttggccggga taaccttggc tgggacgatg atcgggctgg cgatcaccac 2100
cccgattttt gtcatctgca gccctgttct agtcccggcc gctctgctca tcgggtttgc 2160
cgtgagcgcg tttctggcct cggggatggc cgggctgaca gggctgacct cgctgtcgtg 2220
gtttgcgagg tatctgcagc aggctgggca gggagttgga gtggggtgc cggatagttt 2280
cgagcaggcg aagaggcgca tgcaggatgc tgctgggtat atggggcaga agaccaagga 2340
agttgggcag gagatccaga ggaagtctca ggatgtgaaa gcatcagaca aataaggtga 2400
taataagggg ttttgggttc gtgtgtaaac tggtaaaatg gaaattctgg gtttttactgt 2460
acttttgcat gtagtggaat gaatgagttc ttgttctctt ttgtctttta atcataaagt 2520
aagaagcagc atttcatgtt ctggttgaat attgtcaaga attcgcaaca aatttagcta 2580
aaccagttca atcttaccgg ttagacgact tcccagtaag aaacattcca ggtccatccc 2640
```

```
ggtataagag tctggacttc tgaaaccttt agaccttgga tttggaaaaa agatgaaacc 2700
tttagaataa attacaacga tggcagattg tacaaaactg gagtcgagat catgtaaatt 2760
agcccataac taagaaccgg cgatgacaac aattactagg aatatggttg ttgggctggt 2820
cggcggctag cggtgatgat ttggaagaat cggggatcca gaatgtgaga accgaatcat 2880
cgacgaacat tacccggcga ggagcccatt tcaagcaact ttggaactcc tatatggctg 2940
ttccagcagg ccacctgctc aagaaagaaa gaagccatgt cagaaatcct tacgaaatct 3000
aactggatgc tgatatgaat ccgccaggtg tgcggagttc tttacaggca ggatctataa 3060
agaagaaaca tgttttgtat tggcattgtt gatgttccaa gcacgcagcg atctatctcc 3120
ggatcctaac aacaaaaata cggattctgt aagaaacaag cgcagaaaac ttctgcaacg 3180
aaaccactcg tatatttggt tctgagttgg agaaagatga ccatactact gtatttggtt 3240
gaacttggat tggaaccgaa attttgagtt gaaaagcgag tgatcgtata taaatttcag 3300
attcagatta ggatatccta tgagagaagg tagagttacc tgatactaca tactgcccat 3360
caggggtaaa agttgcctcg atggttgtgt ttggagatgg ttccaggcta aatccacaac 3420
gctgaacaaa ttaaaagatg aatggatcaa tcttcaaccc ttacttctgc atttatgagg 3480
attggctcaa ggctctctag a                                           3501
```

```
<210> 5
<211> 180
<212> PRT
<213> Linum usitatissimum

<400> 5
Met Ala Asp Arg Thr Thr Gln Pro His Gln Val Gln Val His Thr Gln
1               5                   10                  15

His His Tyr Pro Thr Gly Gly Ala Phe Gly Arg Tyr Glu Gly Gly Leu
            20                  25                  30

Lys Gly Gly Pro His His Gln Gln Gly Ser Gly Ser Gly Pro Ser Ala
        35                  40                  45

Ser Lys Val Leu Ala Val Met Thr Ala Leu Pro Ile Gly Gly Thr Leu
    50                  55                  60

Leu Ala Leu Ala Gly Ile Thr Leu Ala Gly Thr Met Ile Gly Leu Ala
65                  70                  75                  80

Ile Thr Thr Pro Ile Phe Val Ile Cys Ser Pro Val Leu Val Pro Ala
                85                  90                  95

Ala Leu Leu Ile Gly Phe Ala Val Ser Ala Phe Leu Ala Ser Gly Met
            100                 105                 110

Ala Gly Leu Thr Gly Leu Thr Ser Leu Ser Trp Phe Ala Arg Tyr Leu
        115                 120                 125

Gln Gln Ala Gly Gln Gly Val Gly Val Gly Val Pro Asp Ser Phe Glu
    130                 135                 140

Gln Ala Lys Arg Arg Met Gln Asp Ala Ala Gly Tyr Met Gly Gln Lys
145                 150                 155                 160

Thr Lys Glu Val Gly Gln Glu Ile Gln Arg Lys Ser Gln Asp Val Lys
                165                 170                 175

Ala Ser Asp Lys
            180
```

```
<210> 6
<211> 1676
<212> DNA
<213> Linum usitatissimum

<400> 6
tccactatgt aggtcatatc catcatttta attttgggc accattcaat tccatcttgc 60
```

```
ctttagggat gtgaatatga acggccaagg taagagaata aaaataatcc aaattaaagc 120
aagagaggcc aagtaagata atccaaatgt acacttgtca tcgccgaaat tagtaaaata 180
cgcggcatat tgtattccca cacattatta aaataccgta tatgtattgg ctgcatttgc 240
atgaataata ctacgtgtaa gcccaaaaga acccacgtgt agcccatgca aagttaacac 300
tcacgacccc attcctcagt ctccactata taaacccacc atccccaatc ttaccaaacc 360
caccacacga ctcacaactc gactctcaca ccttaaagaa ccaatcacca ccaaaaaatg 420
gcaaagctga tgagcctagc agccgtagca acgcagttcc tcttcctgat cgtggtggac 480
gcatccgtcc gaaccacagt gattatcgac gaggagacca accaaggccg cggtggaggc 540
aaggtggcag ggacagcagc agtctgcgag cagcagatcc agcagcgaga cttcctgagg 600
agctgccagc agttcatgtg ggagaaagtc cagaggggcg gccacagcca ctattacaac 660
cagggccgtg gaggaggcga acagagccag tacttcgaac agctgtttgt gacgacctta 720
agcaattgcg caccgcggtg caccatgcca ggggacttga gcgtgccat cggccaaatg 780
aggcaggaaa tccagcagca gggacagcag cagggacagc agcaggaagt tcagaggtgg 840
atccagcaag ctaaacaaat cgctaaggac ctccccggac agtgccgcac ccagcctagc 900
caatgccagt ccagggcca gcagcaatct gcatggtttt gaaggggtga tcgattatga 960
gatcgtacaa agacactgct aggtgttaag gatggataat aataataata atgagatgaa 1020
tgtgttttaa gttagtgtaa cagctgtaat aaagagagag agagagagag agagagagag 1080
agagagagag agagagagag agaggctgat gaaatgttat gtatgtttct tggtttttaa 1140
aataaatgaa agcacatgct cgtgtggttc tatcgaatta ttcggcggtt cctgtgggaa 1200
aaagtccaga agggcggccg cagctactac tacaaccaag gccgtggagg agggcaacag 1260
agccagcact tcgatagctg ctgcgatgat cttaagcaat tgaggagcga gtgcacatgc 1320
aggggactgg agcgtgcaat cggccagatg aggcaggaca tccagcagca gggacagcag 1380
caggaagttg agaggtggtc ccatcaatct aaacaagtcg ctagggacct tccgggacag 1440
tgcggcaccc agcctagccg atgccagctc caggggcagc agcagtctgc atggttttga 1500
agtggtgatc gatgagatcg tataaagaca ctgctaggtg ttaaggatgg ataataaga 1560
tgtgttttaa gtcattaacc gtaataaaaa gagagagagg ctgatggaat gttatgtatg 1620
tatgtttctt ggtttttaaa attaaatgga aagcacatgc tcgtgtgggt tctatc     1676
```

<210> 7
<211> 174
<212> PRT
<213> Linum usitatissimum

<400> 7

```
Met Ala Lys Leu Met Ser Leu Ala Ala Val Ala Thr Gln Phe Leu Phe
1               5                   10                  15

Leu Ile Val Val Asp Ala Ser Val Arg Thr Thr Val Ile Ile Asp Glu
                20                  25                  30

Glu Thr Asn Gln Gly Arg Gly Gly Gly Lys Val Ala Gly Thr Ala Ala
            35                  40                  45

Val Cys Glu Gln Gln Ile Gln Gln Arg Asp Phe Leu Arg Ser Cys Gln
        50                  55                  60

Gln Phe Met Trp Glu Lys Val Gln Arg Gly Gly His Ser His Tyr Tyr
65                  70                  75                  80

Asn Gln Gly Arg Gly Gly Gly Glu Gln Ser Gln Tyr Phe Glu Gln Leu
                85                  90                  95

Phe Val Thr Thr Leu Ser Asn Cys Ala Pro Arg Cys Thr Met Pro Gly
            100                 105                 110

Asp Leu Lys Arg Ala Ile Gly Gln Met Arg Gln Glu Ile Gln Gln Gln
            115                 120                 125

Gly Gln Gln Gln Gly Gln Gln Gln Glu Val Gln Arg Trp Ile Gln Gln
        130                 135                 140

Ala Lys Gln Ile Ala Lys Asp Leu Pro Gly Gln Cys Arg Thr Gln Pro
145                 150                 155                 160

Ser Gln Cys Gln Phe Gln Gly Gln Gln Gln Ser Ala Trp Phe
                165                 170
```

<210> 8
<211> 4999
<212> DNA
<213> Linum usitatissimum

<400> 8
```
ctcaagcata cggacaaggg taaataacat agtcaccaga acataataaa caaaaagtgc 60
agaagcaaga taaaaaaatt agctatggac attcaggttc atattggaaa catcattatc 120
ctagtcttgt gaccatcctt cctcctgctc tagttgagag gccttgggac taacgagagg 180
tcagttggga tagcagatcc ttatcctgga ctagcctttc tggtgtttca gagtcttcgt 240
gccgccgtct acatctatct ccattaggtc tgaagatgac tcttcacacc aacgacgttt 300
aaggtctcta tcctactcct agcttgcaat acctggcttg caatacctgg agcatcgtgc 360
acgatgattg gatactgtgg aggaggagtg tttgctgatt tagagctccc ggttgggtga 420
tttgacttcg atttcagttt aggcttgttg aaattttca ggttccattg tgaagccttt 480
agagcttgag cttccttcca tgttaatgcc ttgatcgaat tctcctagag aaaagggaag 540
tcgatctctg agtattgaaa tcgaagtgca catttttttt caacgtgtcc aatcaatcca 600
caaacaaagc agaagacagg taatctttca tacttatact gacaagtaat agtcttaccg 660
tcatgcataa taacgtctcg ttccttcaag aggggttttc cgacatccat aacgacccga 720
agcctcatga aagcattagg gaagaacttt tggttcttct tgtcatggcc tttataggtg 780
tcagccgagc tcgccaattc ccgtccgact ggctccgcaa aatattcgaa cggcaagtta 840
tggacttgca accataactc cacggtattg agcaggacct attgtgaaga ctcatctcat 900
ggagcttcag aatgtggttg tcagcaaacc aatgaccgaa atccatcaca tgacggacgt 960
ccagtgggtg agcgaaacga aacaggaagc gcctatcttt cagagtcgtg agctccacac 1020
cggattccgg caactacgtg ttgggcaggc ttcgccgtat tagagatatg ttgaggcaag 1080
acccatctgt gccactcgta caattacgag agttgtttt tttgtgattt tcctaagttt 1140
ctcgttgatg gtgagctcat attctacatc gtatggtctc tcaacgtcgt ttcctgtcat 1200
ctgatatccc gtcatttgca tccacgtgcg ccgcctcccg tgccaagtcc ctaggtgtca 1260
tgcacgccaa attggtggtg gtgcgggctg ccctgtgctt cttaccgatg ggtggaggtt 1320
gagtttgggg gtctccgcgg cgatggtagt gggttgacgg tttggtgtgg gttgacggca 1380
ttgatcaatt tacttcttgc ttcaaattct ttggcagaaa acaattcatt agattagaac 1440
tggaaaccag agtgatgaga cggattaagt cagattccaa cagagttaca tctcttaaga 1500
aataatgtaa ccccttttaga ctttatatat ttgcaattaa aaaaataatt taacttttag 1560
actttatata tagtttttaat aactaagttt aaccactcta ttatttatat cgaaactatt 1620
tgtatgtctc ccctctaaat aaacttggta ttgtgtttac agaacctata atcaaataat 1680
caatactcaa ctgaagtttg tgcagttaat tgaagggatt aacggccaaa atgcactagt 1740
attatcaacc gaatagattc acactagatg gccatttcca tcaatatcat cgccgttctt 1800
cttctgtcca catatcccct ctgaaacttg agagacacct gcacttcatt gtccttatta 1860
cgtgttacaa aatgaaaccc atgcatccat gcaaactgaa gaatggcgca agaacccttc 1920
ccctccattt cttatgtggc gaccatccat ttcaccatct cccgctataa aacacccca 1980
tcacttcacc tagaacatca tcactacttg cttatccatc caaaagatac ccaccatggc 2040
tagatcatca agccctttgc ttctctcact ctgcattttc gccattctct tccactcttc 2100
tctgggtagg cagcaattcc agcaggggaa cgagtgccag atcgacagga tcgacgcatc 2160
cgagccggac aaaaccatcc aggcagaagc tggcaccatc gaggtatggg accagaaccg 2220
ccagcaattc cagtgcgctg gtgttgccgt tgtaaggcgc accattgagc ccaaaggtct 2280
tctcttgcct ttctacagca acacccctca gctcatctac atcgttcaag gtataaatta 2340
aatcagttca tacaatgata accaccactt cgaatgtatt tatcaaatat caatgatcga 2400
tgcacctgta tgtgttgtgt atattcaggt aggggagtta caggaatcat gttcccakga 2460
tgtccagaga cattcgagga atcccagcag caaggacaac agggccaaca gggtagttcc 2520
caagaccagc accagaagat ccgccgcttc cgtgaaggtg acgtcattgc cgtccctgcc 2580
ggtgtagccc actggtccta caacgatggc aacgaaccag tcatggccat tgttgtccat 2640
gacacttcca gccacctcaa ccaactggac aacaacccca gggtatataa gcattgccgt 2700
agttgctaat aaattgcaca caattggaac tctattttca gtatctaata acttttttcct 2760
tttttggcag aacttctact tggcaggaaa cccgagagac gagttcgaac aatcgcagca 2820
aggaggcagg ctgagccgtg gggagagtga aggtggacga ggacggaggc aacctcttca 2880
acctgcaaca acctcttctt gcggaatcga ctccaagctc atcgcggagg cgttcaatgt 2940
cgacgagaac gtggcaagga ggctacagag cgagaacgac aacagaggcc agatcgtccg 3000
agtcgaaggc gagctcgaca tcgtcagacc tccgaccagt atccaggagg agtcacagga 3060
gcagggaggt cgtggtggtg gccgctacta ctccaatgga gtggaggaga ccttctgctc 3120
catgagacta attgagaaca tcggcgatcc ttctcgggca gacattttca ctccagaagc 3180
cggccgcgtt agatccctca acagccacaa cctccccgtc ctgcaatgga tccagcttag 3240
cgccgagaga ggcgttctct acaatgtata gatctcactc acgcaccaac tctaaattga 3300
atccctaatt atttaattca ccgatatctg accgaccggt ttgaattttg taggaagcga 3360
tcaggctgcc gcactggaac atcaacgcac acagcatagt gtacgcgatc agaggacaag 3420
ccagagtcca gatcgtgaac gaggaaggga attcggtgtt cgatggagtg ctgcaggaag 3480
gacaggtggt gacggtgccg cagaacttcg cggtggtaaa gagatcccag agcgagaggt 3540
```

```
ttgagtgggt ggcgttcaag accaacgaca acgcgatggt gaactcgcta gccgggagga 3600
catcggcagt aagggcgatc cccgcggatg tactggctaa cgcctggagg gtgtcgccgg 3660
aggaggcgag gagggtgaag ttcaacaggc aggagactca cttggctagc accaggggcc 3720
agtccaggtc gcccgggagg ttgaatgtcg tcaaggaggt gatcaacttg cttatgtaaa 3780
atgtgacggt gaaataataa cggtaaaata tatgtaataa taataataat aaagccacaa 3840
agtgagaatg aggggaaggg gaaatgtgta atgagccagt agccggtggt gctaattttg 3900
tatcgtattg tcaataaatc atgaattttg tggtttttat gtgttttttt aaatcatgaa 3960
tttttaaattt tataaaataa tctccaatcg gaagaacaac attccatatc catggatgtt 4020
tctttaccca aatctagttc ttgagaggat gaagcatcac cgaacagttc tgcaactatc 4080
cctcaaaagc tttaaaatga acaacaagga acagagcaac gttccaaaga tcccaaacga 4140
aacatattat ctatactaat actatattat taattactac tgcccggaat cacaatccct 4200
gaatgattcc tattaactac aagccttgtt ggcggcggag aagtgatcgg cgcggcgaga 4260
agcagcggac tcggagacga ggccttggat gagcagagtc tttacctgcc agggcgtgaa 4320
ggggaagagc ggccttctgg agtaggagtt cagcaagcgg cggttccttg gcggagtaag 4380
cggacgtaag ggtggntgtc gacgtcntcg tttcnggagg cgnattcatg aagggttaaa 4440
gtcanatctg tagctctcga gtgctcaggg agccnaaaga cgttgggaaa ccgtcgncgt 4500
ttggggcatc agtcngcggg gcacgcttcc ctcctgctgc tccanaancn angtanattt 4560
aaaaganatg ggaaattaan taatggnaat nannaggagg attgnaacgg tcnganccgn 4620
angaanagtt tttannggtt taaatactgg gggagtngna gccngccnct ggttccngtg 4680
tagangaaac caagnnccgg gaggnttnca nnngnnaggg agaaaaagga nncatttnan 4740
nangcngagg gacatgaanc ggtacngagc tgnggttcan nnancggcgn nnggnagtcc 4800
cnngggaccn ggntgggggtn anaagggaan ggaacattng gtngnangga naanaccntt 4860
ttacnattgc ctttgcaggn nngtntnggc ncntncgggt nacatnccgc tgcatgggct 4920
ttggggngcc nanaggnagc cncangggna nncngccncc ttgtncangn cgctnaagtt 4980
cnattgtana tggncgttg                                             4999
```

<210> 9
<211> 96
<212> PRT
<213> Linum usitatissimum

<400> 9

```
Met Ala Arg Ser Ser Ser Pro Leu Leu Leu Ser Leu Cys Ile Phe Ala
1               5                  10                  15

Ile Leu Phe His Ser Ser Leu Gly Arg Gln Gln Phe Gln Gln Gly Asn
            20                  25                  30

Glu Cys Gln Ile Asp Arg Ile Asp Ala Ser Glu Pro Asp Lys Thr Ile
            35                  40                  45

Gln Ala Glu Ala Gly Glu Val Trp Asp Gln Asn Arg Gln Gln Phe Gln
        50                  55                  60

Cys Ala Gly Val Ala Val Val Arg Arg Thr Ile Glu Pro Lys Gly Leu
65                  70                  75                  80

Leu Leu Pro Phe Tyr Ser Asn Thr Pro Gln Leu Ile Tyr Ile Val Gln
                85                  90                  95
```

<210> 10
<211> 85
<212> PRT
<213> Linum usitatissimum

<400> 10

```
Gly Arg Gly Val Thr Gly Ile Met Phe Pro Xaa Cys Pro Glu Thr Phe
1               5                  10                  15

Glu Glu Ser Gln Gln Gln Gly Gln Gln Gly Gln Gln Gly Ser Ser Gln
            20                  25                  30

Asp Gln His Gln Lys Ile Arg Arg Phe Arg Glu Gly Asp Val Ile Ala
            35                  40                  45
```

```
Val Pro Ala Gly Val Ala His Trp Ser Tyr Asn Asp Gly Asn Glu Pro
     50                  55                  60

Val Met Ala Ile Val Val His Asp Thr Ser Ser His Leu Asn Gln Leu
65                  70                  75                  80

Asp Asn Asn Pro Arg
                85
```

```
<210> 11
<211> 165
<212> PRT
<213> Linum usitatissimum

<400> 11
Asn Phe Tyr Leu Ala Gly Asn Pro Arg Asp Glu Phe Glu Gln Ser Gln
  1               5                  10                  15

Gln Gly Gly Arg Leu Ser Arg Gly Glu Ser Glu Gly Gly Arg Gly Arg
              20                  25                  30

Arg Glu Pro Leu Gln Pro Ala Thr Thr Ser Ser Cys Gly Ile Asp Ser
          35                  40                  45

Lys Leu Ile Ala Glu Ala Phe Asn Val Asp Glu Asn Val Ala Arg Arg
     50                  55                  60

Leu Gln Ser Glu Asn Asp Asn Arg Gly Gln Ile Val Arg Val Glu Gly
65                  70                  75                  80

Glu Leu Asp Ile Val Arg Pro Pro Thr Ser Ile Gln Glu Glu Ser Gln
                85                  90                  95

Glu Gln Gly Gly Arg Gly Gly Gly Arg Tyr Tyr Ser Asn Gly Val Glu
              100                 105                 110

Glu Thr Phe Cys Ser Met Arg Leu Ile Glu Asn Ile Gly Asp Pro Ser
          115                 120                 125

Arg Ala Asp Ile Phe Thr Pro Glu Ala Gly Arg Val Arg Ser Leu Asn
     130                 135                 140

Ser His Asn Leu Pro Val Leu Gln Trp Ile Gln Leu Ser Ala Glu Arg
145                 150                 155                 160

Gly Val Leu Tyr Asn
                165
```

```
<210> 12
<211> 141
<212> PRT
<213> Linum usitatissimum

<400> 12
Glu Ala Ile Arg Leu Pro His Trp Asn Ile Asn Ala His Ser Ile Val
  1               5                  10                  15

Tyr Ala Ile Arg Gly Gln Ala Arg Val Gln Ile Val Asn Glu Glu Gly
              20                  25                  30

Asn Ser Val Phe Asp Gly Val Leu Gln Glu Gly Gln Val Val Thr Val
          35                  40                  45

Pro Gln Asn Phe Ala Val Val Lys Arg Ser Gln Ser Glu Arg Phe Glu
```

```
       50                     55                     60
Trp Val Ala Phe Lys Thr Asn Asp Asn Ala Met Val Asn Ser Leu Ala
 65                 70                 75                 80

Gly Arg Thr Ser Ala Val Arg Ala Ile Pro Ala Asp Val Leu Ala Asn
                85                 90                 95

Ala Trp Arg Val Ser Pro Glu Glu Ala Arg Arg Val Lys Phe Asn Arg
           100                105                110

Gln Glu Thr His Leu Ala Ser Thr Arg Gly Gln Ser Arg Ser Pro Gly
           115                120                125

Arg Leu Asn Val Val Lys Glu Val Ile Asn Leu Leu Met
   130                135                140
```

```
<210> 13
<211> 11
<212> PRT
<213> Linum usitatissimum

<400> 13
Gln Gln Gln Gly Gln Gln Gln Gly Gln Gln Gln
 1               5                  10


<210> 14
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 14
tccactatgt aggtcata                                              18

<210> 15
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 15
ctttaaggtg tgagagtc                                              18

<210> 16
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 16
aggggtgatc gatta                                                 15

<210> 17
<211> 18
<212> DNA
<213> Artificial Sequence
```

<220>
<223> Description of Artificial Sequence: Primer

<400> 17
gatagaaccc acacgagc   18

<210> 18
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 18
tatctagact caagcatacg gacaagggt   29

<210> 19
<211> 6
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: XbaI site

<400> 19
tctaga   6

<210> 20
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 20
ggttatcatt gtatgaactg a   21

<210> 21
<211> 6
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: NcoI site

<400> 21
ccatgg   6

<210> 22
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 22
gcaagcttaa tgtgacggtg aaataataac gg   32

<210> 23
<211> 6
<212> DNA
<213> Artificial Sequence

```
<220>
<223> Description of Artificial Sequence: HindIII Site

<400> 23
aagctt                                                          6

<210> 24
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 24
taggtacctg gcaggtaaag actctgctc                                29

<210> 25
<211> 6
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: KpnI Site

<400> 25
ggtacc                                                          6
```